

Attachment A to Resolution No. R05-007

Amendment to the Water Quality Control Plan – Los Angeles Region to incorporate the Ballona Creek Metals TMDL

Adopted by the California Regional Water Quality Control Board, Los Angeles Region on July 7, 2005.

Amendments:

Table of Contents

Add:

Chapter 7. Total Maximum Daily Loads (TMDLs) Summaries
7-12 Ballona Creek Metals TMDL

List of Figures, Tables and Inserts

Add:

Chapter 7. Total Maximum Daily Loads (TMDLs)
Tables
7-12 Ballona Creek Metals TMDL
7-12.1. Ballona Creek Metals TMDL: Elements
7-12.2. Ballona Creek Metals TMDL: Implementation Schedule

Chapter 7. Total Maximum Daily Loads (TMDLs) Summaries, Section 7-12 (Ballona Creek Metals TMDL)

Add:

This TMDL was adopted by the Regional Water Quality Control Board on July 7, 2005.

This TMDL was approved by:

The State Water Resources Control Board on [Insert Date].
The Office of Administrative Law on [Insert Date].
The U.S. Environmental Protection Agency on [Insert Date].

The following tables include the elements of this TMDL.

Attachment A to Resolution No. R05-007

Table 7-12.1. Ballona Creek and Ballona Creek Estuary Metals TMDL: Elements

Element	Key Findings and Regulatory Provisions																								
Problem Statement	<p>Ballona Creek is on Clean Water Act Section 303(d) list of impaired waterbodies for dissolved copper, dissolved lead, total selenium, and dissolved zinc and Sepulveda Canyon Channel is 303(d) listed for lead. The metals subject to this TMDL are toxic pollutants, and the existing water quality objectives for the metals reflect national policy that the discharge of toxic pollutants in toxic amounts be prohibited. When one of the metals subject to this TMDL is present at levels exceeding the existing numeric objectives, then the receiving water is toxic. The following designated beneficial uses are impaired by these metals: water contact recreation (REC1); non-contact water recreation (REC2); warm freshwater habitat (WARM); estuarine habitat (EST); marine habitat (MAR); wildlife habitat (WILD); rare and threatened or endangered species (RARE); migration of aquatic organisms (MIGR); reproduction and early development of fish (SPWN); commercial and sport fishing (COMM); and shellfish harvesting (SHELL).</p> <p>TMDLs are developed for reaches on the 303(d) list and metal allocations are developed for tributaries that drain to impaired reaches. This TMDL address dry- and wet-weather discharges of copper, lead, selenium and zinc in Ballona Creek and Sepulveda Canyon Channel.</p>																								
Numeric Target (Interpretation of the narrative and numeric water quality objective, used to calculate the load allocations)	<p>Numeric water quality targets are based on the numeric water quality standards established for metals by the California Toxics Rule (CTR). The targets are expressed in terms of total recoverable metals. There are separate numeric targets for dry and wet weather because hardness values and flow conditions in Ballona Creek and Sepulveda Canyon Channel vary between dry and wet weather. The dry-weather targets apply to days when the maximum daily flow in Ballona Creek is less than 40 cubic feet per second (cfs). The wet-weather targets apply to days when the maximum daily flow in Ballona Creek is equal to or greater than 40 cfs.</p> <p>Dry Weather</p> <p>The dry-weather targets are based on the chronic CTR criteria. The copper, lead and zinc targets are dependent on hardness to adjust for site-specific conditions and require conversion factors to convert between dissolved and total recoverable metals. These targets are based on the 50th percentile hardness value of 300 mg/L and the CTR default conversion factors. The conversion factor for lead is hardness dependent, which is also based on a hardness of 300 mg/L. The dry-weather target for selenium is independent of hardness and expressed as total recoverable metals.</p> <table><tr><th colspan="4">Dry-weather numeric targets (µg total recoverable metals/L)</th></tr><tr><th></th><th>Dissolved</th><th>Conversion Factor</th><th>Total Recoverable</th></tr><tr><td>Copper</td><td>23</td><td>0.96</td><td>24</td></tr><tr><td>Lead</td><td>8.1</td><td>0.631</td><td>13</td></tr><tr><td>Selenium</td><td></td><td></td><td>5</td></tr><tr><td>Zinc</td><td>300</td><td>0.986</td><td>304</td></tr></table>	Dry-weather numeric targets (µg total recoverable metals/L)					Dissolved	Conversion Factor	Total Recoverable	Copper	23	0.96	24	Lead	8.1	0.631	13	Selenium			5	Zinc	300	0.986	304
Dry-weather numeric targets (µg total recoverable metals/L)																									
	Dissolved	Conversion Factor	Total Recoverable																						
Copper	23	0.96	24																						
Lead	8.1	0.631	13																						
Selenium			5																						
Zinc	300	0.986	304																						

Attachment A to Resolution No. R05-007

Element	Key Findings and Regulatory Provisions																								
	<p>Wet Weather</p> <p>The wet-weather targets for copper, lead and zinc are based on the acute CTR criteria and the 50th percentile hardness value of 77 mg/L for storm water collected at Sawtelle Boulevard. Conversion factors for copper and zinc are based on a regression of dissolved metal values to total metal values collected at Sawtelle. The CTR default conversion factor based on a hardness value of 77 mg/L is used for lead. The wet-weather target for selenium is independent of hardness and expressed as total recoverable metals.</p> <table><tr><th colspan="4">Wet-weather numeric targets (µg total recoverable metals/L)</th></tr><tr><th></th><th>Dissolved</th><th>Conversion Factor</th><th>Total Recoverable</th></tr><tr><td>Copper</td><td>11</td><td>0.62</td><td>18</td></tr><tr><td>Lead</td><td>49</td><td>0.829</td><td>59</td></tr><tr><td>Selenium</td><td></td><td></td><td>5</td></tr><tr><td>Zinc</td><td>94</td><td>0.79</td><td>119</td></tr></table>	Wet-weather numeric targets (µg total recoverable metals/L)					Dissolved	Conversion Factor	Total Recoverable	Copper	11	0.62	18	Lead	49	0.829	59	Selenium			5	Zinc	94	0.79	119
Wet-weather numeric targets (µg total recoverable metals/L)																									
	Dissolved	Conversion Factor	Total Recoverable																						
Copper	11	0.62	18																						
Lead	49	0.829	59																						
Selenium			5																						
Zinc	94	0.79	119																						
Source Analysis	<p>There are significant difference in the sources of copper, lead, selenium and zinc loadings during dry weather and wet weather. During dry weather, most of the metals loadings are in the dissolved form. Storm drains convey a large percentage of the metals loadings during dry weather because although their flows are typically low, concentrations of metals in urban runoff may be quite high. During dry years, dry-weather loadings account for 25-35% of the annual metals loadings. Additional sources of dry weather flow and metals loading include groundwater discharge and flows from other permitted NPDES discharges within the watershed.</p> <p>During wet weather, most of the metals loadings in Ballona Creek are in the particulate form and are associated with wet-weather storm water flows. On an annual basis, storm water contributes about 91% of the copper loading and 92% of the lead loading to Ballona Creek. Storm water flow is permitted through the municipal separate storm sewer system (MS4) permit issued to the County of Los Angeles, a separate Caltrans storm water permit, a general construction storm water permit, and a general industrial storm water permit.</p> <p>Non-point sources are not considered to be a significant source in this TMDL. Direct atmospheric deposition of metals is insignificant relative to the annual dry-weather loading or the total annual loading. Indirect atmospheric deposition reflects the process by which metals deposited on the land surface may be washed off during storm events and delivered to Ballona Creek and its tributaries. The loading of metals associated with indirect atmospheric deposition are accounted for in the estimates of the storm water loading.</p>																								

Attachment A to Resolution No. R05-007

Element	Key Findings and Regulatory Provisions														
Loading Capacity	TMDLs are developed for copper, lead, selenium and zinc for Ballona Creek and Sepulveda Canyon Channel.														
	Dry Weather														
	Dry-weather loading capacities for Ballona Creek and Sepulveda Canyon Channel are equal to the dry-weather numeric targets multiplied by the critical dry-weather flow for each waterbody. Based on long-term flow records for Ballona Creek at Sawtelle the median dry-weather flow is 14 cfs. The median dry-weather flow for Sepulveda Canyon Channel, based on measurements conducted in 2003, is 6.3 cfs.														
	Dry-weather loading capacity (grams total recoverable metals/day)														
	<table><tr><td></td><td>Copper</td><td>Lead</td><td>Selenium</td><td>Zinc</td></tr><tr><td>Ballona Creek</td><td>821</td><td>440</td><td>171</td><td>10,423</td></tr><tr><td>Sepulveda Channel</td><td>371</td><td>199</td><td>77</td><td>4,712</td></tr></table>		Copper	Lead	Selenium	Zinc	Ballona Creek	821	440	171	10,423	Sepulveda Channel	371	199	77
	Copper	Lead	Selenium	Zinc											
Ballona Creek	821	440	171	10,423											
Sepulveda Channel	371	199	77	4,712											
	Wet Weather														
	Wet-weather loading capacities are calculated by multiplying the daily storm volume by the wet-weather numeric target for each metal.														
	Wet-weather loading capacity (total recoverable metals)														
	<table><tr><td>Metal</td><td>Load Capacity</td></tr><tr><td>Copper</td><td>Daily storm volume x 18 µg/L</td></tr><tr><td>Lead</td><td>Daily storm volume x 59 µg/L</td></tr><tr><td>Selenium</td><td>Daily storm volume x 5 µg/L</td></tr><tr><td>Zinc</td><td>Daily storm volume x 119 µg/L</td></tr></table>	Metal	Load Capacity	Copper	Daily storm volume x 18 µg/L	Lead	Daily storm volume x 59 µg/L	Selenium	Daily storm volume x 5 µg/L	Zinc	Daily storm volume x 119 µg/L				
	Metal	Load Capacity													
Copper	Daily storm volume x 18 µg/L														
Lead	Daily storm volume x 59 µg/L														
Selenium	Daily storm volume x 5 µg/L														
Zinc	Daily storm volume x 119 µg/L														
Load Allocations (for nonpoint sources)	Load allocations (LA) are assigned to non-point sources for Ballona Creek and Sepulveda Canyon Channel.														
	Dry Weather														
	Dry-weather load allocations for copper, lead and zinc are developed for direct atmospheric deposition. The mass-based load allocations are equal to the ratio of the length of each segment over the total length multiplied by the estimates of direct atmospheric loading for Ballona Creek (3.5 g/day for copper, 2.3 g/day for lead, and 11.7 k/day for zinc).														
	Dry-weather direct air deposition LAs (total recoverable metals)														
	<table><tr><td></td><td>Copper (g/day)</td><td>Lead (g/day)</td><td>Zinc (g/day)</td></tr><tr><td>Ballona Creek</td><td>2.0</td><td>1.4</td><td>6.8</td></tr><tr><td>Sepulveda Channel</td><td>0.3</td><td>0.2</td><td>0.9</td></tr></table>		Copper (g/day)	Lead (g/day)	Zinc (g/day)	Ballona Creek	2.0	1.4	6.8	Sepulveda Channel	0.3	0.2	0.9		
		Copper (g/day)	Lead (g/day)	Zinc (g/day)											
Ballona Creek	2.0	1.4	6.8												
Sepulveda Channel	0.3	0.2	0.9												
	Wet Weather														
	Wet-weather load allocations for copper, lead, selenium and zinc are developed for direct atmospheric deposition. The mass-based load allocations for direct atmospheric deposition are equal to the percent area of surface water (0.6%) multiplied by the total loading capacity.														

Attachment A to Resolution No. R05-007

Element	Key Findings and Regulatory Provisions																																																										
	<div><div>Wet-weather direct air deposition LAs (total recoverable metals)</div><div><div>Load Allocation (grams/day)</div><div><div>Copper</div><div>1.05E-07 x Daily storm volume (L)</div></div><div><div>Lead</div><div>3.54E-07 x Daily storm volume (L)</div></div><div><div>Selenium</div><div>3.00E-08 x Daily storm volume (L)</div></div><div><div>Zinc</div><div>7.14E-07 x Daily storm volume (L)</div></div></div></div>																																																										
Waste Load Allocations (for point sources)	<div><div>Waste load allocations (WLA) are assigned to point sources for Ballona Creek and Sepulveda Canyon Channel. A grouped mass-based waste load allocation is developed for the storm water permittees (Los Angeles County MS4, Caltrans, General Construction and General Industrial) by subtracting the load allocation from the total loading capacity. Concentration-based waste load allocations are developed for other point sources in the watershed.</div><div>Dry Weather<div>Dry-weather waste load allocation for storm water is equal to the dry-weather critical flow multiplied by the dry-weather numeric target minus the load allocation for direct atmospheric deposition.</div><div><div>Dry-weather Storm Water WLAs (grams total recoverable metals/day)</div><table><thead><tr><th></th><th>Copper</th><th>Lead</th><th>Selenium</th><th>Zinc</th></tr></thead><tbody><tr><td>Ballona Creek</td><td>818.9</td><td>438.6</td><td>171</td><td>10,416.2</td></tr><tr><td>Sepulveda Channel</td><td>370.7</td><td>198.8</td><td>77</td><td>4,711.1</td></tr></tbody></table><div>A waste load allocation of zero is assigned to all general construction and industrial storm water permits during dry weather. Therefore, the storm water waste load allocations are apportioned between the MS4 permittees and Caltrans, based on an areal weighting approach.</div><div><div>Dry-weather Storm Water WLAs Apportioned between Storm Water Permits (grams total recoverable metals/day)</div><table><thead><tr><th></th><th>Copper</th><th>Lead</th><th>Selenium</th><th>Zinc</th></tr></thead><tbody><tr><td colspan="5">Ballona Creek</td></tr><tr><td>MS4 permittees</td><td>807.7</td><td>432.6</td><td>169</td><td>10,273.1</td></tr><tr><td>Caltrans</td><td>11.2</td><td>6.0</td><td>2</td><td>143.1</td></tr><tr><td colspan="5">Sepulveda Channel</td></tr><tr><td>MS4 Permittees</td><td>365.6</td><td>196.1</td><td>76</td><td>4646.4</td></tr><tr><td>Caltrans</td><td>5.1</td><td>2.7</td><td>1</td><td>64.7</td></tr></tbody></table><div>Concentration-based dry-weather waste load allocations are assigned to the minor NPDES permits and general non-storm water NPDES permits that discharge to Ballona Creek or its tributaries. Any future minor NPDES permits or enrollees under a general non-storm water NPDES permit will also be subject to the concentration-based waste load allocations.</div><div><div>Dry-weather WLAs for other permits (total recoverable metals)</div><table><thead><tr><th>Copper (µg/L)</th><th>Lead (µg/L)</th><th>Selenium (µg/L)</th><th>Zinc (µg/L)</th></tr></thead><tbody><tr><td>24</td><td>13</td><td>5</td><td>304</td></tr></tbody></table></div></div></div></div></div>		Copper	Lead	Selenium	Zinc	Ballona Creek	818.9	438.6	171	10,416.2	Sepulveda Channel	370.7	198.8	77	4,711.1		Copper	Lead	Selenium	Zinc	Ballona Creek					MS4 permittees	807.7	432.6	169	10,273.1	Caltrans	11.2	6.0	2	143.1	Sepulveda Channel					MS4 Permittees	365.6	196.1	76	4646.4	Caltrans	5.1	2.7	1	64.7	Copper (µg/L)	Lead (µg/L)	Selenium (µg/L)	Zinc (µg/L)	24	13	5	304
	Copper	Lead	Selenium	Zinc																																																							
Ballona Creek	818.9	438.6	171	10,416.2																																																							
Sepulveda Channel	370.7	198.8	77	4,711.1																																																							
	Copper	Lead	Selenium	Zinc																																																							
Ballona Creek																																																											
MS4 permittees	807.7	432.6	169	10,273.1																																																							
Caltrans	11.2	6.0	2	143.1																																																							
Sepulveda Channel																																																											
MS4 Permittees	365.6	196.1	76	4646.4																																																							
Caltrans	5.1	2.7	1	64.7																																																							
Copper (µg/L)	Lead (µg/L)	Selenium (µg/L)	Zinc (µg/L)																																																								
24	13	5	304																																																								

Attachment A to Resolution No. R05-007

Element	Key Findings and Regulatory Provisions																																								
	<p>Wet Weather</p> <p>Wet-weather waste load allocation for storm water is equal to the total loading capacity minus the load allocation for direct atmospheric deposition. Wet-weather waste load allocations for the grouped storm water permittees apply to all reaches and tributaries.</p> <p style="text-align: center;">Wet-weather Storm Water WLAs (total recoverable metals)</p> <hr/> <p style="text-align: center;">Waste Load Allocation (grams/day)</p> <hr/> <table> <tr> <td>Copper</td><td>$1.79\text{E-}05 \times \text{Daily storm volume (L)}$</td></tr> <tr> <td>Lead</td><td>$5.87\text{E-}05 \times \text{Daily storm volume (L)}$</td></tr> <tr> <td>Selenium</td><td>$4.97\text{E-}06 \times \text{Daily storm volume (L)}$</td></tr> <tr> <td>Zinc</td><td>$1.18\text{E-}04 \times \text{Daily storm volume (L)}$</td></tr> </table> <p>The storm water waste load allocations are apportioned between the MS4 permittees, Caltrans, the general construction and the general industrial storm water permits based on an areal weighting approach.</p> <p style="text-align: center;">Wet-weather Storm Water WLAs Apportioned Between Storm Water Permits (total recoverable metals)</p> <hr/> <p style="text-align: center;">Waste Load Allocation (grams/day)</p> <hr/> <p><u>Copper</u></p> <table> <tr> <td>MS4 Permittees</td><td>$1.70\text{E-}05 \times \text{Daily storm volume (L)}$</td></tr> <tr> <td>Caltrans</td><td>$2.37\text{E-}07 \times \text{Daily storm volume (L)}$</td></tr> <tr> <td>General Construction</td><td>$4.94\text{E-}07 \times \text{Daily storm volume (L)}$</td></tr> <tr> <td>General Industrial</td><td>$1.24\text{E-}07 \times \text{Daily storm volume (L)}$</td></tr> </table> <p><u>Lead</u></p> <table> <tr> <td>MS4 Permittees</td><td>$5.58\text{E-}05 \times \text{Daily storm volume (L)}$</td></tr> <tr> <td>Caltrans</td><td>$7.78\text{E-}07 \times \text{Daily storm volume (L)}$</td></tr> <tr> <td>General Construction</td><td>$1.62\text{E-}06 \times \text{Daily storm volume (L)}$</td></tr> <tr> <td>General Industrial</td><td>$4.06\text{E-}07 \times \text{Daily storm volume (L)}$</td></tr> </table> <p><u>Selenium</u></p> <table> <tr> <td>MS4 Permittees</td><td>$4.73\text{E-}06 \times \text{Daily storm volume (L)}$</td></tr> <tr> <td>Caltrans</td><td>$6.59\text{E-}08 \times \text{Daily storm volume (L)}$</td></tr> <tr> <td>General Construction</td><td>$1.37\text{E-}07 \times \text{Daily storm volume (L)}$</td></tr> <tr> <td>General Industrial</td><td>$3.44\text{E-}08 \times \text{Daily storm volume (L)}$</td></tr> </table> <p><u>Zinc</u></p> <table> <tr> <td>MS4 Permittees</td><td>$1.13\text{E-}04 \times \text{Daily storm volume (L)}$</td></tr> <tr> <td>Caltrans</td><td>$1.57\text{E-}06 \times \text{Daily storm volume (L)}$</td></tr> <tr> <td>General Construction</td><td>$3.27\text{E-}06 \times \text{Daily storm volume (L)}$</td></tr> <tr> <td>General Industrial</td><td>$8.19\text{E-}07 \times \text{Daily storm volume (L)}$</td></tr> </table> <p>Each storm water permittee enrolled under the general construction or industrial storm water permits will receive an individual waste load allocation on a per acre basis, based on the acreage of their facility.</p>	Copper	$1.79\text{E-}05 \times \text{Daily storm volume (L)}$	Lead	$5.87\text{E-}05 \times \text{Daily storm volume (L)}$	Selenium	$4.97\text{E-}06 \times \text{Daily storm volume (L)}$	Zinc	$1.18\text{E-}04 \times \text{Daily storm volume (L)}$	MS4 Permittees	$1.70\text{E-}05 \times \text{Daily storm volume (L)}$	Caltrans	$2.37\text{E-}07 \times \text{Daily storm volume (L)}$	General Construction	$4.94\text{E-}07 \times \text{Daily storm volume (L)}$	General Industrial	$1.24\text{E-}07 \times \text{Daily storm volume (L)}$	MS4 Permittees	$5.58\text{E-}05 \times \text{Daily storm volume (L)}$	Caltrans	$7.78\text{E-}07 \times \text{Daily storm volume (L)}$	General Construction	$1.62\text{E-}06 \times \text{Daily storm volume (L)}$	General Industrial	$4.06\text{E-}07 \times \text{Daily storm volume (L)}$	MS4 Permittees	$4.73\text{E-}06 \times \text{Daily storm volume (L)}$	Caltrans	$6.59\text{E-}08 \times \text{Daily storm volume (L)}$	General Construction	$1.37\text{E-}07 \times \text{Daily storm volume (L)}$	General Industrial	$3.44\text{E-}08 \times \text{Daily storm volume (L)}$	MS4 Permittees	$1.13\text{E-}04 \times \text{Daily storm volume (L)}$	Caltrans	$1.57\text{E-}06 \times \text{Daily storm volume (L)}$	General Construction	$3.27\text{E-}06 \times \text{Daily storm volume (L)}$	General Industrial	$8.19\text{E-}07 \times \text{Daily storm volume (L)}$
Copper	$1.79\text{E-}05 \times \text{Daily storm volume (L)}$																																								
Lead	$5.87\text{E-}05 \times \text{Daily storm volume (L)}$																																								
Selenium	$4.97\text{E-}06 \times \text{Daily storm volume (L)}$																																								
Zinc	$1.18\text{E-}04 \times \text{Daily storm volume (L)}$																																								
MS4 Permittees	$1.70\text{E-}05 \times \text{Daily storm volume (L)}$																																								
Caltrans	$2.37\text{E-}07 \times \text{Daily storm volume (L)}$																																								
General Construction	$4.94\text{E-}07 \times \text{Daily storm volume (L)}$																																								
General Industrial	$1.24\text{E-}07 \times \text{Daily storm volume (L)}$																																								
MS4 Permittees	$5.58\text{E-}05 \times \text{Daily storm volume (L)}$																																								
Caltrans	$7.78\text{E-}07 \times \text{Daily storm volume (L)}$																																								
General Construction	$1.62\text{E-}06 \times \text{Daily storm volume (L)}$																																								
General Industrial	$4.06\text{E-}07 \times \text{Daily storm volume (L)}$																																								
MS4 Permittees	$4.73\text{E-}06 \times \text{Daily storm volume (L)}$																																								
Caltrans	$6.59\text{E-}08 \times \text{Daily storm volume (L)}$																																								
General Construction	$1.37\text{E-}07 \times \text{Daily storm volume (L)}$																																								
General Industrial	$3.44\text{E-}08 \times \text{Daily storm volume (L)}$																																								
MS4 Permittees	$1.13\text{E-}04 \times \text{Daily storm volume (L)}$																																								
Caltrans	$1.57\text{E-}06 \times \text{Daily storm volume (L)}$																																								
General Construction	$3.27\text{E-}06 \times \text{Daily storm volume (L)}$																																								
General Industrial	$8.19\text{E-}07 \times \text{Daily storm volume (L)}$																																								

Attachment A to Resolution No. R05-007

Element	Key Findings and Regulatory Provisions
	<div><div>Individual per Acre WLAs for General Construction or Industrial Storm Water Permittees (total recoverable metals)</div><div><div>Waste Load Allocation (grams/day/acre)</div><div><div>Copper</div><div>2.20E-10</div><div>x</div><div>Daily storm volume (L)</div></div><div><div>Lead</div><div>7.20E-10</div><div>x</div><div>Daily storm volume (L)</div></div><div><div>Selenium</div><div>6.10E-11</div><div>x</div><div>Daily storm volume (L)</div></div><div><div>Zinc</div><div>1.45E-09</div><div>x</div><div>Daily storm volume (L)</div></div></div><div>Concentration-based wet-weather waste load allocations are assigned to the minor NPDES permits and general non-storm water NPDES permits that discharge to Ballona Creek or its tributaries. Any future minor NPDES permits or enrollees under a general non-storm water NPDES permit will also be subject to the concentration-based waste load allocations.</div><div><div>Wet-weather WLAs for other permits (total recoverable metals)</div><div><div>Copper (µg/L)</div><div>Lead (µg/L)</div><div>Selenium (µg/L)</div><div>Zinc (µg/L)</div></div><div><div>18</div><div>59</div><div>5</div><div>119</div></div></div></div>
Margin of Safety	There is an implicit margin of safety through the use of conservative values for the conversion from total recoverable metals to the dissolved fraction during dry and wet weather. In addition, the TMDL includes a margin of safety by evaluating dry-weather and wet-weather conditions separately and assigning allocations based on two disparate critical conditions.
Implementation	<div>The regulatory mechanisms used to implement the TMDL will include the Los Angeles County Municipal Storm Water NPDES Permit (MS4), the State of California Department of Transportation (Caltrans) Storm Water Permit, minor NPDES permits, general NPDES permits, general industrial storm water NPDES permits, and general construction storm water NPDES permits. Nonpoint sources will be regulated through the authority contained in Sections 13263 and 13269 of the Water Code, in conformance with the State Water Resources Control Board’s Nonpoint Source Implementation and Enforcement Policy (May 2004). Each NPDES permit assigned a WLA shall be reopened or amended at re-issuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement.</div> <div>The Regional Board shall reconsider this TMDL in five years after the effective date of the TMDL based on additional data obtained from special studies. Table 7-12.2 presents the implementation schedule for the responsible permittees.</div> <div>Minor NPDES Permits and General Non-Storm Water NPDES Permits:</div> <div>Permit writers may translate applicable waste load allocations into effluent limits for the minor and general NPDES permits by applying the effluent limitation procedures in Section 1.4 of the State Water Resources Control Board’s Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of</div>

Attachment A to Resolution No. R05-007

Element	Key Findings and Regulatory Provisions								
	<p>California (2000) or other applicable engineering practices authorized under federal regulations. Compliance schedules may be established in individual NPDES permits, allowing up to 5 years within a permit cycle to achieve compliance. Compliance schedules may not be established in general NPDES permits. A discharger that can not comply immediately with effluent limitations specified to meet waste load allocations will be required to apply for an individual permit, in order to, demonstrate the need for a compliance schedule.</p> <p>Permittees that hold individual NPDES permits and solely discharge storm water may be allowed (at Regional Board discretion) compliance schedules up to 10 years from the effective date of the TMDL to achieve compliance with final WLAs.</p> <p>General Industrial Storm Water Permits:</p> <p>The Regional Board will develop a watershed specific general industrial storm water permit to incorporate waste load allocations.</p> <p><u>Dry-weather Implementation</u></p> <p>Non-storm water flows authorized by Order No. 97-03 DWQ, or any successor order, are exempt from the dry-weather waste load allocation equal to zero. Instead, these authorized non-storm water flows shall meet the concentration-based waste load allocations assigned to the other NPDES Permits. The dry-weather waste load allocation equal to zero applies to unauthorized non-storm water flows, which are prohibited by Order No. 97-03 DWQ.</p> <p>It is anticipated that the dry-weather waste load allocations will be implemented by requiring improved best management practices (BMPs) to eliminate the discharge of non-storm water flows. However, the permit writers must provide adequate justification and documentation to demonstrate that specified BMPs are expected to result in attainment of the numeric waste load allocations.</p> <p><u>Wet-weather Implementation</u></p> <p>The general industrial storm water permittees are allowed interim wet-weather concentration-based waste load allocations based on benchmarks contained in EPA’s Storm Water Multi-sector General Permit for Industrial Activities. The interim waste load allocations apply to all industry sectors for a period not to exceed ten years from the effective date of the TMDL.</p> <p>Interim Wet-Weather WLAs for General Industrial Storm Water Permittees (total recoverable metals)</p> <table><tr><th>Copper (µg/L)</th><th>Lead (µg/L)</th><th>Selenium (µg/L)</th><th>Zinc (µg/L)</th></tr><tr><td>63.6</td><td>81.6</td><td>238.5</td><td>117</td></tr></table> <p>In the first five years from the effective date of the TMDL, interim waste load allocations will not be interpreted as enforceable permit conditions. If monitoring demonstrates that interim waste load</p>	Copper (µg/L)	Lead (µg/L)	Selenium (µg/L)	Zinc (µg/L)	63.6	81.6	238.5	117
Copper (µg/L)	Lead (µg/L)	Selenium (µg/L)	Zinc (µg/L)						
63.6	81.6	238.5	117						

Attachment A to Resolution No. R05-007

Element	Key Findings and Regulatory Provisions
	<p>allocations are being exceeded, the permittee shall evaluate existing and potential BMPs, including structural BMPs, and implement any necessary BMP improvements. It is anticipated that monitoring results and any necessary BMP improvements would occur as part of an annual reporting process. After five years from the effective date of the TMDL, interim waste load allocations shall be translated into enforceable permit conditions. Compliance with permit conditions may be demonstrated through the installation, maintenance, and monitoring of Regional Board-approved BMPs. If this method of compliance is chosen, permit writers must provide adequate justification and documentation to demonstrate that BMPs are expected to result in attainment of interim waste load allocations.</p> <p>The general industrial storm water permits shall achieve final wet-weather waste load allocations no later than 10 years from the effective date of the TMDL, which shall be expressed as NPDES water quality-based effluent limitations. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs if adequate justification and documentation demonstrate that BMPs are expected to result in attainment of waste load allocations.</p> <p>General Construction Storm Water Permits:</p> <p>Waste load allocations will be incorporated into the State Board general permit upon renewal or into a watershed-specific general permit developed by the Regional Board.</p> <p><u>Dry-weather Implementation</u></p> <p>Non-storm water flows authorized by the General Permit for Storm Water Discharges Associated with Construction Activity (Water Quality Order No. 99-08 DWQ), or any successor order, are exempt from the dry-weather waste load allocation equal to zero as long as they comply with the provisions of sections C.3 and A.9 of the Order No. 99-08 DWQ, which state that these authorized non-storm discharges shall be (1) infeasible to eliminate (2) comply with BMPs as described in the Storm Water Pollution Prevention Plan prepared by the permittee, and (3) not cause or contribute to a violation of water quality standards, or comparable provisions in any successor order. Unauthorized non-storm water flows are already prohibited by Order No. 99-08 DWQ.</p> <p><u>Wet-weather Implementation</u></p> <p>Within seven years of the effective date of the TMDL, the construction industry will submit the results of BMP effectiveness studies to determine BMPs that will achieve compliance with the final waste load allocations assigned to construction storm water permittees. Regional Board staff will bring the recommended BMPs before the Regional Board for consideration within eight years of the effective date of the TMDL. General construction storm water permittees will be considered</p>

Attachment A to Resolution No. R05-007

Element	Key Findings and Regulatory Provisions
	<p>in compliance with final waste load allocations if they implement these Regional Board approved BMPs. All permittees must implement the approved BMPs within nine years of the effective date of the TMDL. If no effectiveness studies are conducted and no BMPs are approved by the Regional Board within eight years of the effective date of the TMDL, each general construction storm water permit holder will be subject to site-specific BMPs and monitoring requirements to demonstrate compliance with final waste load allocations.</p> <p>MS4 and Caltrans Storm Water Permits:</p> <p>The County of Los Angeles, City of Los Angeles, Beverly Hills, Culver City, Inglewood, Santa Monica, and West Hollywood are jointly responsible for meeting the mass-based waste load allocations for the MS4 permittees. Caltrans is responsible for meeting their mass-based waste load allocations, however, they may choose to work with the MS4 permittees. The primary jurisdiction for the Ballona Creek watershed is the City of Los Angeles.</p> <p>Applicable CTR limits are being met most of the time during dry weather, with episodic exceedances. Due to the expense of obtaining accurate flow measurements required for calculating loads, concentration-based permit limits may apply during dry weather. These concentration-based limits would be equal to the dry-weather concentration-based waste load allocations assigned to the other NPDES permits.</p> <p>Each municipality and permittee will be required to meet the storm water waste load allocation at the designated TMDL effectiveness monitoring points. A phased implementation approach, using a combination of non-structural and structural BMPs may be used to achieve compliance with the stormwater waste load allocations. The administrative record and the fact sheets for the MS4 and Caltrans storm water permits must provide reasonable assurance that the BMPs selected will be sufficient to implement the waste load allocations.</p> <p>The implementation schedule for the MS4 and Caltrans permittees consists of a phased approach, with compliance to be achieved in prescribed percentages of the watershed, with total compliance to be achieved within 15 years.</p>
<i>Seasonal Variations and Critical Conditions</i>	<p>Seasonal variations are addressed by developing separate waste load allocations for dry weather and wet weather.</p> <p>Based on long-term flow records, dry-weather flows in Ballona Creek are estimated to be 14 cubic feet per second (cfs). Since, this flow has been very consistent, 14 cfs is used to define the critical dry-weather flow for Ballona Creek at Sawtelle Boulevard (upstream of Sepulveda Canyon Channel). There are no historic flow records to determine the average long-term flows for Sepulveda Canyon Channel. Therefore, in the absence of historical records the 2003 dry-weather characterization study measurements are assumed reasonable estimates of flow for this</p>

Attachment A to Resolution No. R05-007

Element	Key Findings and Regulatory Provisions										
	<p>channel. The critical dry-weather flow for Sepulveda Canyon Channel is defined as the average flow of 6.3 cfs.</p> <p>Wet-weather allocations are developed using the load-duration curve concept. The total wet-weather waste load allocation varies by storm, therefore, given this variability in storm water flows, no justification was found for selecting a particular sized storm as the critical condition.</p>										
Monitoring	<p>Effective monitoring will be required to assess the condition of the Ballona Creek and to assess the on-going effectiveness of efforts by dischargers to reduce metals loading to Ballona Creek. Special studies may also be appropriate to provide further information about new data, new or alternative sources, and revised scientific assumptions. Below the Regional Board identifies the various goals of monitoring efforts and studies. The programs, reports, and studies will be developed in response to subsequent orders issued by the Executive Officer.</p> <p>Ambient monitoring</p> <p>An ambient monitoring program is necessary to assess water quality throughout Ballona Creek and its tributaries and the progress being made to remove the metals impairments. The MS4 and Caltrans storm water NPDES permittees are jointly responsible for implementing the ambient monitoring program. The responsible agencies shall analyze samples for total recoverable metals and dissolved metals, including cadmium and silver, and hardness once a month at each monitoring location. The reported detection limits shall be lower than the hardness adjusted CTR criteria to determine if water quality objectives are being met. There are three ambient monitoring locations.</p> <table border="1" data-bbox="581 1171 1427 1339"> <thead> <tr> <th colspan="2" data-bbox="581 1171 812 1207">Ambient Monitoring Locations</th></tr> <tr> <th data-bbox="581 1207 812 1243">Waterbody</th><th data-bbox="812 1207 1427 1243">Location</th></tr> </thead> <tbody> <tr> <td data-bbox="581 1243 812 1278">Ballona Creek</td><td data-bbox="812 1243 1427 1278">At Sawtelle Boulevard</td></tr> <tr> <td data-bbox="581 1278 812 1314">Sepulveda Channel</td><td data-bbox="812 1278 1427 1314">Just Above the Confluence with Ballona Creek</td></tr> <tr> <td data-bbox="581 1314 812 1339">Ballona Creek</td><td data-bbox="812 1314 1427 1339">At Inglewood Boulevard</td></tr> </tbody> </table> <p>TMDL Effectiveness Monitoring</p> <p>The MS4 and Caltrans storm water NPDES permittees are jointly responsible for assessing the progress in reducing pollutant loads to achieve the TMDL. The MS4 and Caltrans storm water NPDES permittees are required to submit for approval of the Executive Officer a coordinated monitoring plan that will demonstrate the effectiveness of the phased implementation schedule for this TMDL, which requires attainment of the applicable waste load allocations in prescribed percentages of the watershed over a 15-year period. The monitoring locations specified for the ambient monitoring program may be used as the effectiveness monitoring locations.</p> <p>The MS4 and Caltrans storm water NPDES permittees will be found to be effectively meeting the dry-weather waste load allocations if the in-stream pollutant concentrations or load at the first downstream monitoring location is equal to or less than the corresponding</p>	Ambient Monitoring Locations		Waterbody	Location	Ballona Creek	At Sawtelle Boulevard	Sepulveda Channel	Just Above the Confluence with Ballona Creek	Ballona Creek	At Inglewood Boulevard
Ambient Monitoring Locations											
Waterbody	Location										
Ballona Creek	At Sawtelle Boulevard										
Sepulveda Channel	Just Above the Confluence with Ballona Creek										
Ballona Creek	At Inglewood Boulevard										

Attachment A to Resolution No. R05-007

Element	Key Findings and Regulatory Provisions
	<p>concentration- or load-based waste load allocation. Alternatively, effectiveness of the TMDL may be assessed at the storm drain outlet based on the concentration-based waste load allocation for the receiving water. For storm drains that discharge to other storm drains, the waste load allocation will be based on the waste load allocation for the ultimate receiving water for that storm drain system.</p> <p>The MS4 and Caltrans storm water NPDES permittees will be found to be effectively meeting the wet-weather waste load allocations if the loading at the most downstream monitoring location is equal to or less than the wet-weather waste load allocation. Compliance with individual general construction and industrial storm water permittees will be based on monitoring of discharges at the property boundary. Compliance may be assessed based on concentration and/or load allocations.</p> <p>The general storm water permits shall contain a model monitoring and reporting program to evaluate BMP effectiveness. A permittee enrolled under the general permits shall have the choice of conducting individual monitoring based on the model program or participating in a group monitoring effort. MS4 permittees are encouraged to take the lead in group monitoring efforts for industrial facilities under their jurisdiction because compliance with waste load allocations by these facilities will in many cases translate to reductions in metals loads to the MS4 system.</p> <p>Special studies</p> <p>The implementation schedule, Table 7-12.2, allows time for special studies that may serve to refine the estimate of loading capacity, waste load and/or load allocations, and other studies that may serve to optimize implementation efforts. The Regional Board will re-consider the TMDL in the fifth year after the effective date in light of the findings of these studies. Studies may include:</p> <ul style="list-style-type: none"> • Refinement of hydrologic and water quality model • Additional source assessment • Refinement of potency factors correlation between total suspended solids and metals loadings during dry and wet weather • Correlation between short-term rainfall intensity and metals loadings for use in sizing in-line structural BMPs • Correlation between storm volume and total recoverable metals loading for use in sizing storm water retention facilities • Refined estimates of metals partitioning coefficients, conversion factors, and site-specific toxicity. • Evaluation of potential contribution of aerial deposition and sources of aerial deposition.

Attachment A to Resolution No. R05-007

Table 7-12.2. Ballona Creek Metals TMDL: Implementation Schedule

Date	Action
Effective date of the TMDL	Regional Board permit writers shall incorporate the waste load allocations into the NPDES permits. Waste load allocations will be implemented through NPDES permit limits in accordance with the implementation schedule contained herein, at the time of permit issuance or re-issuance.
4 years after effective date of the TMDL	Responsible jurisdictions and agencies shall provide to the Regional Board results of the special studies.
5 years after effective date of the TMDL	The Regional Board shall reconsider this TMDL to re-evaluate the waste load allocations and the implementation schedule.
MINOR NPDES PERMITS AND GENERAL NON-STORM WATER NPDES PERMITS	
Upon permit issuance or renewal	The non-storm water NPDES permittees shall achieve the waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Compliance schedules may allow up to five years in individual NPDES permits to meet permit requirements. Compliance schedules may not be established in general NPDES permits. Permittees that hold individual NPDES permits and solely discharge storm water may be allowed (at Regional Board discretion) compliance schedules up to 10 years from the effective date of the TMDL to achieve compliance with final WLAs.
GENERAL INDUSTRIAL STORM WATER PERMITS	
Upon permit issuance or renewal	The general industrial storm water NPDES permittees shall achieve dry-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs. Permittees shall begin to install and test BMPs to meet the interim wet-weather WLAs. BMP effectiveness monitoring will be implemented to determine progress in achieving interim wet-weather waste load allocations.
5 years after effective date of the TMDL	The general industrial storm water NPDES permittees shall achieve the interim wet-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs. Permittees shall begin an iterative BMP process including BMP effectiveness monitoring to achieve compliance

Attachment A to Resolution No. R05-007

Date	Action
	with final wet-weather WLAs.
10 years after the effective date of the TMDL	The general industrial storm water NPDES permittees shall achieve the final wet-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs.
GENERAL CONSTRUCTION STORM WATER PERMITS	
Upon permit issuance, renewal, or re-opener	Non-storm water flows not authorized by Order No. 99-08 DWQ, or any successor order, shall achieve dry-weather waste load allocations of zero. Waste load allocations shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs.
7 years from the effective date of the TMDL	The construction industry will submit the results of wet-weather BMP effectiveness studies to the Regional Board for consideration. In the event that no effectiveness studies are conducted and no BMPs are approved, permittees shall be subject to site-specific BMPs and monitoring to demonstrate BMP effectiveness.
8 years from the effective date of the TMDL	The Regional Board will consider results of the wet-weather BMP effectiveness studies and consider approval of BMPs no later than six years from the effective date of the TMDL.
9 years from the effective date of the TMDL	All general construction storm water permittees shall implement Regional Board-approved BMPs.
MS4 AND CALTRANS STORM WATER PERMITS	
12 months after the effective date of the TMDL	In response to an order issued by the Executive Officer, the MS4 and Caltrans storm water NPDES permittees must submit a coordinated monitoring plan, to be approved by the Executive Officer, which includes both ambient monitoring and TMDL effectiveness monitoring. Once the coordinated monitoring plan is approved by the Executive Officer ambient monitoring shall commence.
48 months after effective date of TMDL (Draft Report) 54 months after effective date of TMDL (Final Report)	MS4 and Caltrans storm water NPDES permittees shall provide a written report to the Regional Board outlining the drainage areas to be address and how these areas will achieve compliance with the waste load allocations. The report shall include implementation methods, an implementation schedule,

Attachment A to Resolution No. R05-007

Date	Action
	proposed milestones, and any applicable revisions to the TMDL effectiveness monitoring plan.
6 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 50% of the total drainage area served by the MS4 system is effectively meeting the dry-weather waste load allocations and 25% of the total drainage area served by the MS4 system is effectively meeting the wet-weather waste load allocations.
8 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 75% of the total drainage area served by the MS4 system is effectively meeting the dry-weather waste load allocations.
10 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 100% of the total drainage area served by the MS4 system is effectively meeting the dry-weather waste load allocations and 50% of the total drainage area served by the MS4 system is effectively meeting the wet-weather waste load allocations.
15 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 100% of the total drainage area served by the MS4 system is effectively meeting both the dry-weather and wet-weather waste load allocations.